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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/087,994	03/05/2002	Noriyuki Yamamoto	900-420	4459
23117	7590	03/08/2005	EXAMINER	
NIXON & VANDERHYE, PC 1100 N GLEBE ROAD 8TH FLOOR ARLINGTON, VA 22201-4714			CREPEAU, JONATHAN	
			ART UNIT	PAPER NUMBER
			1746	

DATE MAILED: 03/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/087,994

Applicant(s)

YAMAMOTO ET AL.

Examiner

Jonathan S. Crepeau

Art Unit

1746

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 23 November 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-34 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 9, 12, 14, 15, 21-25 and 27-34 is/are allowed.
- 6) ☒ Claim(s) 1-4, 8, 10, 11, 13, 16 and 17 is/are rejected.
- 7) ☒ Claim(s) 5-7, 18-20 and 26 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Response to Amendment***

1. This Office action addresses claims 1-7 and newly added claims 8-34. Claims 9, 12, 14, 15, 21-25, and 27-34 are allowed and claims 5-7, 18-20, and 26 contain allowable subject matter. Claims 1-4, 8, 10, 11, 13, 16, and 17 are newly rejected under 35 U.S.C. 103(a) but this rejection was not necessitated by amendment. As such, this action is non-final.

It is further noted that claims 5 and 7 contain the status identifier “(Previously Amended).” In accordance with 37 CFR §1.121, this status identifier is improper and should be changed to “(Previously Presented).”

### ***Claim Objections***

2. Claim 26 is objected to under 37 CFR 1.75 as being a substantial duplicate of claim 20. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

***Claim Rejections - 35 USC § 103***

3. Claims 1-4, 8, 10, 11, 13, 16, and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gieshoff et al (U.S. Patent 6,686,075).

The reference is generally directed to a PEM fuel cell (see col. 4, line 67). On a support member which is present directly adjacent the anode or upstream of the fuel cell in the fuel supply stream, a microorganism or enzyme is present which functions to generate hydrogen from carbon monoxide (see col. 4, line 51 et seq.).

The reference does not expressly teach that the fuel cell comprises a housing, as recited in claims 1, 3, 8, 11, and 16.

However, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made because the artisan would be motivated to incorporate the fuel cell of Gieshoff et al. into a housing. Such a housing would be useful to prevent mixing of reactants and to extend the life of the components of the cell. As such, this limitation is not considered to distinguish over the disclosure of Gieshoff et al.

As a further note, Applicant is advised that this rejection may be obviated by filing a translation of Applicant's priority document.

***Allowable Subject Matter***

4. Claims 9, 12, 14, 15, 21-25, and 27-34 are allowed.
5. Claims 5-7, 18-20, and 26 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

6. The following is a statement of reasons for the indication of allowable subject matter:

Regarding claims 5, 9, 12, 18, 28, 30, 32, and 34, these claims recite a specific catalyst that is allowable for the reasons previously indicated.

Regarding claims 6, 7, 19, 20, 26, 27, 29, 31, and 33, Gieshoff et al. teach that reformat containing carbon monoxide is supplied to the biochemical catalyst and CO is reacted thereon. As such, CO functions as the “material for fuel” recited in the instant claims. Therefore, the reference does not fairly suggest using an aqueous solution, or reacting an oxygen-containing hydrocarbon on the biochemical catalyst, as required by the claims.

Regarding claims 14, 15, and 23, which recite a filter external to the housing (formed in the supply section), Applicant’s arguments with regard to this limitation are persuasive and the Heller reference is not considered to fairly suggest this configuration.

Regarding claim 21, Palmore et al (*J. Electroanalytical Chem.* 1998) is considered to be the closest prior art. This reference teaches a methanol feed to the fuel cell but does not teach or fairly suggest that the enzymes for reacting the methanol are immobilized on a “layer” as required by claim 21.

*Conclusion*

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jonathan Crepeau whose telephone number is (571) 272-1299. The examiner can normally be reached Monday-Friday from 9:30 AM - 6:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Barr, can be reached at (571) 272-1414. The phone number for the organization where this application or proceeding is assigned is (571) 272-1700. Documents may be faxed to the central fax server at (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Jonathan Crepeau  
Primary Examiner  
Art Unit 1746  
March 4, 2005